

# Introduction to Computing — Lab

## Week -03

### Topic

cin, cout

### Objective

- To get input from the user and store it in variables.
- To display message/output to the screen.
- To identify and fix syntax and semantic errors in code.

### Outcomes

1. Recognize and fix syntax errors in **cin** and **cout** statements.
2. Learn to identify and fix semantic errors in **cin** and **cout** statements.
3. Write **cin** and **cout** code with minimal syntax and semantic errors.
4. Apply best practices to avoid syntax and semantic errors in **cin** and **cout** code.

### Content

The following topics require understanding for this lab session:

1. cin
2. cout

Details of these topics are given below:

### 1. Cin

**cin** is an input extraction operator in C++ that is used to read input from the standard input stream (usually the keyboard) and store it in variables. It is a part of the iostream standard library in C++.

### 2. Cout

**cout** is an output insertion operator in C++ that is used to insert output into the standard output stream (usually the screen). It is a part of the iostream standard library in C++.

## Tasks

Students are required to complete the following tasks in lab timings.

### Task 1

Write a C++ code that creates an integer variable and inputs its value using **cin** statement and prints the entered value.

```
Enter Variable Value: 55
Variable Value Entered: 55
Press any key to continue . . .
```

### Task 2

Write a C++ program to display the following output in single cout statement:

**Hello, Class!**

**Welcome to the ITC-Lab Week-03**

### Task 3

Identify and fix the syntax error in the following C++ code:

```
#include<iostream>
using namespace std;

int main(){
    int x = 5
    cout << "The value of x is " << x;
    return 0;|
}
```

### Task 4

Write a C++ program in which take input an integer from the user using cin and display its square using cout.

### Task 5

Write a C++ code to print the remainder of any two numbers (x, y

### Task 6

Identify and fix the syntax errors in the following C++ code:

```
#include<iostream>
using namespace std;

int main {
    cout << "Hello, World!";
    int x = 5
    cout << "x = " << x
    return 0

}
```

### Task 7

Write a C++ code to ask the five test scores. The program should calculate the average test scores and display it.

### Task 8

Write a C++ program that reads the radius of a circle (as a **float**) from the user and calculates the area. The program should display the area.

$$\text{Formula: } A = \pi r^2 \quad (\pi = 3.14)$$

### Task 9

Write a C++ code to calculate the area and perimeter of the rectangle. The program should the users to input the sides of the rectangle. It should then calculate the area and perimeter of the rectangle and display the result.

$$\text{Area of Rectangle} = \text{width} * \text{length}$$

$$\text{Perimeter of Rectangle} = 2 * (\text{width} + \text{length})$$

### Task 10

Write a C++ program in which get minutes as input from user, and display the total number of hours and minutes.

Enter minutes: 546

9 Hours, 6 minutes

### Task 11

Write a C++ program in which get hours, minutes as input from user, and calculates the total number of minutes.

```
Enter hours: 5
Enter minutes: 37
Total minutes: 337
```

### Task 12

Write a C++ program that creates variables for a result sheet and input their value from user and print them in a formatted manner.

```
Enter Value of Chemistry: 71
Enter Value of Maths: 83
Enter Value of Physics: 85
```

MATHS	CHEMISTRY	PHYSICS	TOTAL
71	83	85	239

```
Press any key to continue . . .
```

### Task 13

Write a C++ program that inputs price and quantity of the following items and print the total value. The items are **Wheat, Rice & Sugar**. ( $\text{Value} = \text{Price} * \text{Quantity}$ )

```
Enter price of Wheat: 35
Enter quantity of Wheat: 2
Enter price of Rice: 150
Enter quantity of Rice: 3
Enter price of Sugar: 85
Enter quantity of Sugar: 4
```

```
Value of Wheat: 70
Value of Rice: 450
Value of Sugar: 340
```

```
Press any key to continue . . .
```

#### Task 14

There are three seating categories at a stadium. For a softball game, Class A seats cost Rs 15, Class B seats cost Rs 12, and Class C seats cost Rs 9. Write a program that asks how many tickets for each class of seats were sold out, then display the amount of income generated from tickets.

#### Task 15

Write a C++ program that creates 4 integer variables name **Fuel, Rent, Bills & Total**, the program must input the first three variables and calculates their sum and print them in a tabular form.

```
Enter Value of Fuel: 35
Enter Value of Rent: 15
Enter Value of Bills: 50

FUEL:          35
RENT:          15
BILLS:         50
TOTAL:         100

Press any key to continue . . .
```

#### Task 16

A car holds 12 gallons of gasoline and can travel 350 miles before refueling. Write a program that calculates the number of miles per gallon the car gets. Display the result on the screen.

*Hint: Use the following formula to calculate miles per gallon (MPG):*

*MPG = Miles Driven / Gallons of Gas Used*

#### Task 17

Convert the following pseudocode to C++ code. Be sure to define the appropriate variables.

- Store 20 in the speed variable.
- Store 10 in the time variable.
- Multiply speed by time and store the result in the distance variable.
- Display the contents of the distance variable.

### Task 18

Write a C++ program to ask the user for a number and then calculate the square and cube of the next five number including that number. Display the result in the tabular form.

#### Output Example:

input = 5

No	Square	Cube
5	25	125
6	36	216
7	49	343
8	64	512
9	81	729
10	100	1000

### Task 19

A bag of cookies hold 40 cookies. The calories information on the bag claims that there are 10 “servings” in the bag and that serving equal 300 calories. Write a program that asks the user to input how many cookies he or she actually ate and then report how many of the calories were consumed.

### Task 20

A restaurant offers three types of meals: **Gourmet meals** cost Rs 50, **Standard meals** cost Rs 30, and **Fast meals** cost Rs 20. Write a program that prompts the user to enter how many of each type of meal were sold and then calculates and displays the total revenue generated from meal sales.

### Task 21

An online platform offers three types of courses: **Basic courses** cost Rs 500, **Advanced courses** cost Rs 1000, and **Professional courses** cost Rs 2000. Platform announced 15% discount on the total cost. Write a program that asks the user how many courses of each type they want to enroll in, calculates the total cost, applies any discount, and displays the final amount due.

### Task 22

Create a program that calculates the Body Mass Index (BMI) for a user. The user should input their weight in kilograms and height in meters. Display the calculated BMI.

#### Formula:

$$\text{BMI} = \text{kg/m}^2$$

### Task 23

Write a C++ program that calculates the volume and surface area of a cylinder. The program should prompt the user to input the radius (r) and height (h) of the cylinder. Use the following formulas:

- **Volume of Cylinder** =  $\pi * r^2 * h$
- **Surface Area of Cylinder** =  $2 * \pi * r * (r + h)$